Tribal Nonpoint Source Management Program: Mississippi Choctaw

Project Description: The Mississippi Choctaw trust lands consist of eight individual communities in eight counties of east-central Mississippi and encompass more than 24,000 acres. Land ownership within these eight communities is "checker boarded," adjoined and fragmented by non-Indian lands. The tribe is currently acquiring additional land parcels as they become available to consolidate the Choctaw ownership pattern, to facilitate access and management capabilities and the delivery of services to its members. The Choctaw population is currently more than 8,100.

Water resources available to the Tribe can be divided into two categories: surface and ground water. The reservation's surface water resource base consists of 14 lakes and ponds totaling approximately nine acres, 9.3 miles of the Pearl River, 6.1 miles of ephemeral streams, and 1.1 miles of man-made canals. Groundwater on the reservation may be obtained from one of three aquifer systems. One system is used primarily, due to its quantity compared with the other two smaller systems. To develop a better understanding of pollution sources on the reservation, a comprehensive pollution prevention plan with specific best management practices (BMPs) has been developed. This management plan provides the maximum benefit of natural resources while reducing environmental pollution. Surface water quality criteria and wastewater treatment goals are addressed in the plan.

A nonpoint source (NPS) assessment and management report completed for the Tribe by environmental consultants identified NPS pollution that has affected, or has the potential to affect water quality on the Choctaw reservation. The pollution sources identified throughout the eight Indian communities are classified into three main categories: 1) Silviculture - harvesting, reforestation, residue management, forest management, road construction/maintenance; 2) Construction - highway, road, bridge, housing construction, industrial/commercial building construction; and 3) Resource Extraction/Development - surface mining topping pits.

Siltation resulting from these three categories is the primary source of pollution of tribal waters. The erosion rate of hill area lands is 40 to 50 tons per acre each year, where those lands are without adequate tree, brush, and grass cover. Gullies caused by skid rails, fire lanes, roads, etc., can produce annual soil losses greater than 100 tons per acre per year. These sources of NPS pollution impair the quality of streams, rivers, lakes, groundwater and other bodies of water on the Choctaw reservation.

The Water Quality Best Management Practices Plan consists of the following activities:

- BMPs to address erosion and siltation problems affecting water quality on the Choctaw reservation.
- Meetings with stakeholders to discuss and implement pollution prevention activities/plan. This group will act in an advisory capacity to the Tribal Chief on NPS pollution as it affects the Choctaw reservation.
- Establish the Natural Resource Conservation Committee to oversee the implementation of the pollution prevention plan and BMPs.
- Conduct monitoring activities to identify discharge points, drainage patterns, direction of flow, water quality at surface water bodies affected by discharges,

locations of significant materials exposed to storm water, structural control measures to control erosion and siltation.

- Develop and pass Tribal Ordinances adopting erosion and sediment controls for disturbed areas and enforce selected BMPs.

- Evaluate the success of pollution prevention activities and implement a pilot project demonstrating the effective use of BMPs selected and compare this site with a project where no pollution prevention activity was implemented.

During construction, vegetative and structural measures may be applied as BMPs in residential areas to control sedimentation and erosion. Applications of jute, excelsior and wood cellulose may be used at some sites instead of mulch to protect the soil from erosion during critical periods of grass cover establishment. The alternative ground covers have the tensile strength and weight to resist water flow and erosion.

Establishment of permanent vegetative cover with perennial grasses and legumes at some sites may provide long term protection of exposed soil areas against erosion and sediment production. However, permanent vegetation alone may not adequately protect bare steep slopes or areas with excessive water drainage. These areas may require structural measures in combination with permanent vegetation to provide adequate protection. Grade stabilization structures may be installed in natural or excavated channels to protect against excessive water velocities, grades, or over fall conditions.

As a part of the NPS Management Program, water quality in streams in the Pearl River watershed was assessed based on physical and chemical parameters including dissolved oxygen, temperature and stream flow rate. Total chlorine and chlorine residual were measured in surface waters because effluent from wastewater treatment plants are chlorinated to control pathogen levels. Water samples were collected monthly for 12 months for laboratory analysis. Analysis of data collected indicated that the quality of surface water in the Pearl River watershed was good to excellent. Dissolved oxygen, BOD, pH, fecal coliforms, total dissolved and suspended solids were within acceptable levels. The only parameter of concern for the treatment plants was residual chlorine; values obtained ranged from 0-0.9 mg/L. Fecal coliform counts were generally good except one facility in the Conehatta community. The low pathogen levels in all but one facility can be attributed to the residual chlorine levels. Other data were within acceptable ranges.

The recent construction of a new one million gallon per day wastewater treatment facility in the Pearl River Indian community, and the closure of two smaller wastewater treatment lagoons, appear to have contributed to the acceptable levels of water quality. The effluent BOD and pH were observed to be within acceptable limits and all other parameters were within expected ranges. Stream temperatures during the study period did not vary

significantly at any of the sites sampled. Data collected found pH at each sampling location to be virtually constant over the sampling period.

Water quality monitoring data continues to be collected monthly. These data provide preliminary indications as to environmental conditions within the watershed of the Choctaw reservation. The data also indicate the effect that recent changes in construction management activities have on water quality in the watershed.

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Link: **Choctaw Soil Erosion Project:**
http://www.epa.gov/owow/nps/Section319II/choctaw.html